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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,790	08/01/2003	Maki Hamaguchi	240883US0	1684
22850	7590	01/25/2006	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			MOORE, KARLA A	
			ART UNIT	PAPER NUMBER
			1763	
DATE MAILED: 01/25/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/631,790

Applicant(s)

HAMAGUCHI, MAKI

Examiner

Karla Moore

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 November 2005.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.  
4a) Of the above claim(s) 5-14 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-4 and 15-18 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 01 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent No. 6,383,333 to Haino et al. in view of U.S. Patent No. 5,993,596 to Uwai et al. and U.S. Patent No. 5,833,754 to Ito et al.

3. Haino et al. disclose a component of glass-like carbon capable of being used in a CVD apparatus substantially as claimed and characterized by having a value of surface roughness ( $R_a$ ) ranging from 0.1 to 10  $\mu\text{m}$  (abstract).

4. However, Haino et al. do teach that it is important to perform a purification process (column 4, rows 30-33), Haino et al. fail to teach the component containing in its surface iron, copper chromium, sodium, potassium, calcium, magnesium, and aluminum each in an amount less than  $5 \times 10$  atoms/cm<sup>2</sup>.

5. Uwai et al. teach that a component for plasma processing having a high purity, that is reduced metal impurity content, for the purpose of preventing diffusion of the impurities into wafers to be processed and contamination of the wafers with fine particles (column 4, rows 1-7).

6. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a plasma processing component (to be used in CVD, for example) with a reduced metal impurity content in Haino et al. in order to prevent diffusion of the impurities into wafers to be processed and contamination of the wafers with fine particles as taught by Uwai et al.

7. Examiner recognizes that the prior art does not teach specific values for the reduction of the metal impurities. However, the courts have ruled that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

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8. Haino et al. and Uwai et al. disclose the invention substantially as claimed and as described above, including the component of glass-like carbon being an inner tube with an inner and outer surface.

9. However, Haino et al. and Uwai et al. fail to teach the entire surface of the component (or, both the inner and outer surfaces of the component) having a surface roughness ( $R_a$ ) ranging from 0.1 to 10  $\mu\text{m}$ .

10. Examiner notes that one of ordinary skill in the art would have recognized that providing any surface that *might* be exposed to the processing conditions, whether purposefully or inadvertently, with the same surface roughness characteristics and composition properties as taught for the inner surface directly adjacent the processing area would have been advantageous in order to prevent the detrimental results associated with deposition processing as taught in Haino et al. and Uwai et al.

11. Ito et al. teach the use of an inner tube (protective sleeve) provided at a distance from the inner wall of a processing chamber or directly adjacent a processing chamber for the purpose of preventing the direct deposition of released gaseous products on the walls of a processing chamber (column 2, rows 35-64 and column 3, rows 26-40). Examiner notes that although the sleeve of Ito et al. is taught to be spaced a distance from the chamber wall, it would still be connected to the chamber at somewhere in order to maintain a proper position.

12. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made that when using an inner tube set at a distance from an inner wall of a processing chamber as taught by Ito et al. to have provided any and all surfaces of the inner tube that might come in contact with the processing environment with the same surface roughness characteristics and composition properties as provided on the inner surface of the inner tube in order to achieve a reduction of impurities introduced into the processing environment as disclosed by Haino et al., Uwai et al. and Ito et al.

13. With respect to claim 4, the component may be any of an inner tube (abstract), a wafer boat, a susceptor and a nozzle capable of being used for CVD apparatus.

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14. With respect to claims 15-18, as described above, the component can be a tube as taught by Haino et al. and it would be obvious to provide both inner and outer surfaces with specific surface roughness characteristics if they might be exposed to a processing environment.

15. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haino et al., Uwai et al. and Ito et al. as applied to claims 1, 4 and 15-18, and further in view of U.S. Patent No. 5,324,411 to Ichishima et al.

16. Haino et al., Uwai et al. and Ito et al. fail to explicitly teach that the component has a surface finished such that there exist at least five pits, 1-10  $\mu\text{m}$  (claim 2) or 0.5-5  $\mu\text{m}$  (claim 3) in diameter, in the visual field, 50\*50  $\mu\text{m}$ .

17. Ichishima et al. teach the porosity of a glass-like carbon component for a plasma processing apparatus must be optimized by taking into account that if the pores are too small the surface area of the component will be too large and the pores are likely to absorb impurity gases and particles and on the other hand of the pores are too large damage will be done to gas flow and charge density. With respect to the density of the pores, if the density is too low the advantages of the charge density will be lessened and if the density is too high the absorption of impurity gases and particles becomes conspicuous (column 3, row 51-column 4, row 12).

18. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a glass-like carbon component with optimized porosity characteristics in Haino et al., Uwai et al. and Ito et al. in order to provided a component and process with optimized processing characteristics as taught by Ichishima et al.

### ***Response to Arguments***

19. Applicant's arguments with respect to claims 1-4 and 15-18 have been considered but are moot in view of the new ground(s) of rejection. Ito et al. has been relied upon, in addition to Haino et al. and Uwai et al., in order address the newly added limitations of the amended and new claims. Ito et al. teaches that a sleeve member for a deposition processing apparatus may be placed directly adjacent a

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chamber wall or at a distance from a chamber wall. If a sleeve is provided at a distance from a chamber wall, it would have been obvious to one of ordinary skill in the art to provide all exposed surfaces of the sleeve with the same surface roughness characteristics and composition properties taught in Haino et al. and Uwai et al. for the same reason(s) the inner surface is provided with the desirable surface roughness characteristics and composition properties.

### ***Conclusion***

20. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Karla Moore  
Patent Examiner  
Art Unit 1763  
20 January 2006